REMARKS

In view of the foregoing amendments and the following remarks, allowance of this case is earnestly solicited.

Claims 1-21 have been allowed. Claims 165 and 186 have been amended by this amendment.

I. WRITTEN DESCRIPTION REJECTIONS

Claims 123-128, 136-140, 144-162, 165-170, 172-183, 186-190 and 193-246 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The written description requirement is satisfied when the specification conveys, with reasonable clarity, to those skilled in the art, that, as of the filing date, the applicant was in possession of the claimed subject matter. *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1295 (Fed. Cir. 2002); *In re Alton*, 76 F.3d 1168, 1172 (Fed. Cir. 1996). "How the specification accomplishes this is not material." *Alton,* 76 F.3d at 1172. The specification does not need to set forth the "minutiae of descriptions or procedures perfectly obvious to one of ordinary skill in the art." *In re Eltgroth*, 419 F.2d 918, 921 (CCPA 1970).

Importantly, the Federal Circuit has repeatedly held that the exact words used in the claim do not have to appear in the specification in order to satisfy the written description requirement. *University of Rochester v. G.D. Searle & Co., Inc.*, 358 F.3d 916, 922-23 (Fed. Cir. 2004) ("this court and its predecessor have repeatedly held that claimed subject matter 'need not be described *in haec verba*' in the specification to satisfy the written description requirement."); *Cordis Corp. v. Medtronic Ave, Inc.*, 339 F.3d 1352, 1364 (Fed. Cir. 2003) ("The disclosure as

originally filed does not, however, have to provide *in haec verba* support for the claimed subject matter at issue."); *All Dental Prodx, LLC v. Advantage Dental Product, Inc.*, 309 F.3d 774, 779 (Fed. Cir. 2002) ("In order to comply with the written description requirement, the specification 'need not describe the claimed subject matter in exactly the same terms as used in the claims; it must simply indicate to persons skilled in the art that as of the [filing] date the applicant had invented what is now claimed'") (*quoting Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. cir. 1995). In fact, "the failure of the specification to specifically mention a limitation that later appears in the claims is not a fatal one when one skilled in the art would recognize upon reading the specification that the new language reflects what the specification shows has been invented." *All Dental*, 309 F.3d at 779.

In the present case, the written description rejections appear to have been made because the exact words used in the claims do not appear in the specification. But as demonstrated by the cases cited above (and many other cases), this is not the test for compliance with the written description. Thus, applicants respectfully traverse each of the written description rejections.

A. Claims 123-128, 136-140, 144-162, 165-170, 172-183, 186-190 and 193-210 Satisfy the Written Description Requirement

The following paragraphs provide written description support for each of the elements and limitations identified in the Office Action as failing to comply with the written description requirement.

Claim 123: "operation of the remote input device in response to the menu of the pop-up screen causes the remote site to terminate the first connection and to establish a second connection."

The Office Action states that "[t]he specification discloses the pop up menu but does not disclose pop-up screen causes the remote site to terminate the first connection and to establish a second connection." But this misapprehends the limitation that is the subject of the rejection. The claim states that "operation of the remote input device" in response to the menu causes the termination of the first connection and establishment of the second connection. This is different from the menu causing the termination and establishment of connections. Written description support for this limitation appears, for example, at cols. 49:64-50:2; 44:22-29; 44:1-2; and Figs. 1 and 7. These passages and associated figures show how a menu prompts a user to switch to a new host site by, inter alia, terminating the first connection to the first host site and establishing a second connection to a second host site.

Claim 136: "a remote access facility"

Written description support for this limitation appears, for example, at cols. 11:34-37; 12:40-53; 12:54-13:4; and Fig. 1. The cited portions of the specification describe how the remote access facility can be, for example, a combination of hardware and software.

Claim 136: "non-dedicated" channel

Written description support for this limitation appears, for example, at cols. 6:6-14; 6:26-37; 6:54-57; 10:34-40; 11:34-37 and Fig. 1. The cited portions of the specification describe a dedicated channel as one that is capable of only carrying data between a Remote PC and a Host Unit. The specification gives preferred examples of non-dedicated channels such as telephone lines or any other communications network.

Claims 157 and 160: a "reset operation"

Written description support for this limitation appears, for example, at cols. 6:66-7:2; 10:29-33; 20:48-59; 21:22-22:2; 33:9-16; 49:41-57; and Figs. 4A, 4E, 5A, and 7C. The cited portions of the specification describe, inter alia, a preferred implementation of a reset operation as one in which the AC power is interrupted to a Host PC causing the Host PC to perform a cold boot.

Claims 157 and 160: a "reset command"

Written description support for this limitation appears, for example, at cols. 6:66-7:2; 10:29-33; 20:48-59; 21:22-22:2; 33:9-16; 49:41-57; and Figs. 4A, 4E, 5A, and 7C. The specification describes how the selection of a menu option causes a command to be received by a Host Unit, which in turn interrupts AC power to a Host PC.

Claim 165: "packetize"

Written description support for this limitation appears, for example, at cols. 17:12-19; 17:53-56; 26:15-45; 32:60-33:8; 53:52-54:35; 55:7-31; and Fig. 8. These passages, and the associated figures, describe, *inter alia*, how analog video signals which have been digitized are sent as packets to the remote PC.

Claim 169: "target" computer

Claim 169 recites "[a] system for controlling a target computer from a remote workstation of the type that includes a remote keyboard, a mouse, and a monitor, . . ." Thus, the context of the claim itself makes it clear that the "target" computer is one of the various Host PCs disclosed throughout the specification as part of the preferred embodiments. Figure 1 shows this arrangement graphically. The remote workstation corresponds to components at the remote site of Figure 1. One of the principle purposes of the present application is the ability to control

a computer from a remote workstation. Thus, referring to the embodiment shown in Figure 1, the "target" computer would be one of the Host PCs 10, 16 or 20.

Claim 169: "video digitizer"

Written description support for this limitation appears, for example, at cols. 12:54-13:4; 13:46-58; 22:56-23:10; 23:64-24:9; 24:26-54; 25:48-26:14; and Figs. 4A, 4G, 4H, and 4K. The specification explains how circuitry in the Host Unit can convert analog video signals to digitized video signals/information.

Claim 177: "video digitizer"

Written description support for this limitation appears, for example, at cols. 12:54-13:4; 13:46-58; 22:56-23:10; 23:64-24:9; 24:26-54; 25:48-26:14; and Figs. 4A, 4G, 4H, and 4K. The specification explains how circuitry in the Host Unit can convert analog video signals to digitized video signals/information.

Claim 177: "synchronize detect circuit"

Written description support for this limitation appears, for example, at cols. 23:1-10; 29:57-30:17 and Figs. 4A and 4P. This circuitry detects vertical and horizontal synchronize signals from an analog video signal.

Claim 177: "clocking rate"

Written description support for this limitation appears, for example, at cols. 22:15-30; 22:56-61; 29:28-56; 40:9-43:67; and Figs. 4A, 4O, and 6. These passages describe how, in a preferred embodiment, the Video CPU corresponds to the microprocessor that determines a clocking rate used to sample the analog video signals. The Figure 4O circuitry corresponds to one embodiment of the clock signal generator that produces a clock signal.

Claim 177: "converter"

Written description support for this limitation appears, for example, at cols. 12:54-13:4; 13:46-58; 22:56-23:10; 23:64-24:9; 24:26-54; 25:48-26:14; and Figs. 4A, 4G, 4H, and 4K. The specification explains how circuitry in the Host Unit can convert analog video signals to digitized video signals/information.

Claim 186: "network access device"

In part, claim 186 recites a system in which a "network access device" interfaces with a network that includes a plurality of computer processors and a selected computer. The selected computer is a computer that will receive keyboard signals and generate video signals. The selected computer is one that is listed on a menu of a video monitor associated with the keyboard signals. Thus, the full context of claim 186 makes it clear that a preferred implementation of the "network access device" is a Host Unit 8. Written description support for this limitation appears, for example, at cols. 5:67-6:2; 6:15-19; 6:26-37; 7:42-47; 11:43-50; 44:22-29; 49:58-50:14; and Fig. 1.

Claim 193: "hardware host unit"

In part, claim 193 recites a "hardware host unit" coupled to a host computer that is different from the hardware host unit. In one of the preferred embodiments, this hardware host unit is Host Unit 8, 13, or 18. Each such Host Unit is a hardware host unit that is coupled to a host computer (*i.e.*, Host PC 10, 16, or 20, respectively). Written description support for this limitation appears, for example, at cols.5:17-23; 5:42-58; and Fig. 1.

Claim 193: "remote computer software utility"

In part, claim 193 recites a "remote computer software utility" located at a remote site computer. In one preferred embodiment, this software utility corresponds to a set of software operating on a Remote PC 2. Written description support for this limitation appears, for example, at cols. 5:17-23; 6:6-14; 6:54-57; 7:7-9; 44:12-29; and Figs. 1 and 7A.

Claim 194: "converter"

Written description support for this limitation appears, for example, at cols. 12:54-13:4; 13:46-58; 22:56-23:10; 23:64-24:9; 24:26-54; 25:48-26:14; and Figs. 4A, 4G, 4H, and 4K. The specification explains how circuitry in the Host Unit can convert analog video signals to digitized video signals/information.

Claim 204: video raster signal "independently"

In part, claim 204 recites a method step of converting a video raster signal into a digital signal, where the converting step occurs "independently" of the data processing device that generated the video raster signal. In a preferred embodiment described in the specification, the Host Unit 8, 13, and 18 perform such a conversion step independently of the Host PCs 10, 16, and 20. Written description support for this limitation appears, for example, at cols. 12:54-13:4; 13:46-58; 22:56-23:10; 23:64-24:9; 24:26-54; 25:48-26:14; and Figs. 4A, 4G, 4H, and 4K.

B. In an Unrelated Patent Application, The U.S. Patent Office Has Taken the Official Position That Claims 211-246 Satisfy the Written Description Requirement

Claims 211-246 were formerly pending in U.S. Patent Application No. 09/401,501 as claims 11, 13-41, 43, 44, and 48-51. The '501 application is owned by the same assignee as the present application. During prosecution of the '501 application, claims 11, 13-41, 43, 44, and 48-51 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,732,212,

which is the basis of the present reissue application. Thus, in the '501 application, the U.S. Patent Office has taken the official position that claims 11, 13-41, 43, 44, and 48-51 of the '501 application (*i.e.*, claims 211-246 of the present application) are fully-disclosed and enabled by the present application, and thus, satisfy the written description requirement. Accordingly, claims 211-246 have been presented in this application for examination.

If the Patent Office was correct when it examined the '501 application, then claims 211-246 belong in this application and the written description rejections should be withdrawn. But the present applicants need not denigrate either of the two applications until the Patent Office finally resolves the issue of where these claims belong. Thus, in the present reissue application, applicants intend to put forward the contentions made by the Patent Office in the '501 application. To that end, the following identifies the written description support in the present application that was relied upon by the Patent Office in rejecting the claims in the '501 application.

For ease of reference, a copy of the December 24, 2002 Office Action in the '501 application is attached to the present Amendment as Exhibit 1. Exhibit 2 (attached hereto) is a copy of the '501 application as filed which shows the pendency of claims 11, 13-20, 22-41, 43, 44, and 48-51 in that application. Exhibit 3 (attached hereto) is a copy of an Amendment dated October 10, 2002 from the '501 application prosecution history. This Amendment shows language of claim 21 when it was rejected by the Patent Office in the '501 application.

Claim 211: a "remote access engine"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 1:25-64; 2:5-3:20; 5:23-30; 6:26-7:16; 8:15-25; 8:49-67; and 9:15-55.

Claim 211: a "field programmable gate array"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 20:19-31; and 22:15-24.

Claim 211: "video sync processing"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: Fig. 4E.

Claim 212: a "standard remote access engine"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 2:5-3:20; 7:16-50; 1:25-64; 5:23-30; 6:26-7:16; 8:15-25; 8:49-67; and 9:15-55.

Claim 213: a "TTL converter"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: col. 7:16-50.

Claim 220: a "remote access engine"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 1:25-64; 2:5-3:20; 5:23-30; 6:26-7:16; 8:15-25; 8:49-67; and 9:15-55.

Claim 220: "set of circuit modules"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: Abstract; cols.25:33-40; 26:15-31; 54:64-55:33; and 56:50-65.

Claim 222: a "remote access engine"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 1:25-64; 2:5-3:20; 5:23-30; 6:26-7:16; 8:15-25; 8:49-67; and 9:15-55.

Claim 227: a "converter"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: col. 7:16-50.

Claim 227: multiple "gate array"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: Video CPU 114; video processor 111; Fig. 1; cols. 20:19-31; 22:15-24; 23:17-50; 24:55-67; 34:48-35:19; and 35:33-44.

Claim 239: a "flash palette converter circuit"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: col. 7:50-8:15; Fig. 4A; cols. 18:42-19:20; and 29:28-55.

Claim 241: "distantly located"

Applicants cannot find an instance where the Examiner in the '501 application Office Action cited the present application as disclosing "distantly located." However, it is believed

that "distantly located" is supported by the use of the term "remote" throughout the specification to refer to the relationship between a Remote Site and a Host System.

Claim 241: a "switch"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 11:50-12:15; and 18:9-28.

Claim 243: "real time" video signals

In the '501 application, it appears that the Examiner equated "real time" video signals with the video signal generated by a Host PC 10, 16, 20.

Claim 243: "mouse synchronizer"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 19:56-20:12; and Fig. 1.

Claim 246: a "mouse capture circuit"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: Fig. 1.

Claim 246: "mouse adjustment process"

In the '501 application, it appears that the Examiner relied upon the following portions of the present application as support for this element/limitation: cols. 19:56-20:12; 38:25-45; 48:47-55.

II. INDEFINITENESS REJECTION

Claim 165 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. Specifically, the limitation "the remote user" in the keyboard and mouse limitations was rejected as having insufficient antecedent basis. This rejection is respectfully traversed in light of the amendments to claim 165 contained in the present Amendment.

III. SECTION 102(E) REJECTION OF CLAIMS 123-128

Claims 123-128, 136-140, 144-162, 165-170, 172-183, 186-190 and 193-246 were rejected under 35 U.S.C. 102(e) as being anticipated by Fitzgerald et al ("Fitzgerald"), U.S. Patent No. 5,349,675. These rejections are respectfully traversed.

With respect to claims 123-128, Fitzgerald does not teach or suggest "plural host computer sites," or "an on-screen display process . . . ."

In the context of claim 123, a connection is established between a remote site and a first selected host computer at a first host computer site. The claim recites plural host computer sites. Input signals from the remote input device are transmitted to the host computer at the first host computer site. Screen data from the host display device is transmitted to the remote display device at the remote site. Fitzgerald only discloses one computer system 12, which, as applied in the Office Action, allegedly corresponds to a first host computer site. *See* Fitzgerald, Figs. 1 and 2. Fitzgerald never teaches a system in which there are *multiple* computer systems that exchange screen data and remote input device signals with a *single* remote site. This teaching is entirely absent from Fitzgerald. Thus, claims 123-128 are not anticipated by Fitzgerald for at least this reason.

Moreover, Fitzgerald does not teach or suggest "an on-screen display process" as recited in claims 123-128. In the context of claim 123, the "on-screen display process" provides a pop-

up menu identifying the host computers at the plural host sites. Operation of the remote input device in response to the pop-up screen causes the remote site to terminate a first connection with the first host computer, and to establish a second connection to a second selected host computer. Fitzgerald does not teach or suggest a pop-up menu (provided by an on-screen display process) at all. Fitzgerald certainly does not teach or suggest an operation of a remote input device in response to a pop-up menu that causes a termination of a first connection and establishment of a second connection.

In Fitzgerald, connection to computer system 12 is established by a command line input at the central computer site. Specifically, the RUNCMD command that is input at central computer 128 includes an "address_of_service_point" field which specifies the address of the service point of the recipient node. (Fitzgerald, col. 6:64-7:6). Thus, the user of central computer 128 must enter the address corresponding to the local processor console 16 as a command line item. This is how Fitzgerald establishes a connection to computer system 12 (and thus to the desired local processor console 16). *Id.* Fitzgerald does not teach or suggest any other way of establishing a connection between central computer 128 and computer system 12. Thus, Fitzgerald fails to teach or suggest any "on-screen display process" as recited in claims 123-128. Consequently, claims 123-128 are not anticipated by Fitzgerald for at least this additional reason.

Accordingly, applicants respectfully request that the anticipation rejections of claims 123-128 be withdrawn.

IV. SECTION 102(E) REJECTION OF CLAIMS 136-140, 144-162, 165-170, 172-183, 186-190 AND 193-246

With respect to claims 136-140, 144-162, 165-170, 172-183, 186-190 and 193-246, the Office Action alleges that those claims have "similar limitations" to the limitations recited in claims 123-128, and therefore, Fitzgerald anticipates those claims for the same reasons as set forth for claims 123-128. To the extent that the Office Action alleges that claims 136-140, 144-162, 165-170, 172-183, 186-190 and 193-246 have similar limitations to claims 123-128, applicants incorporate by reference their arguments as to why Fitzgerald does not teach or suggest those limitations. Thus, Fitzgerald does not anticipate claims 136-140, 144-162, 165-170, 172-183, 186-190 and 193-246 for the same reasons expressed above for claims 123-128.

Accordingly, applicants respectfully request that the anticipation rejections of claims 136-140, 144-162, 165-170, 172-183, 186-190 and 193-246 be withdrawn.

CONCLUSION

For the foregoing reasons, applicants respectfully solicit earnest and favorable reconsideration of the application.

Respectfully submitted,

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CLEAN COPY OF CLAIMS (INCLUDING AMENDMENTS)

1. (Original) A computer monitoring system for monitoring information displayed on a video display terminal connected to, and receiving display information from, a data processing device comprising:

video raster signal input means for receiving a video raster signal representative of said information displayed on the video display terminal from the data processing device; and

conversion means connected to said video raster signal input means for converting said video raster signal into a digital signal representative of said information contained in said video raster signals,

said conversion means comprising character determination means for determining an identity of each character displayed on the video display terminal and for generating a digital code indicative of said identity of said each character displayed on the video display terminal,

said character determination means comprising circuitry for generating a series of cyclic redundancy checks, wherein each said cyclic redundancy check is generated from pixel information associated with each character location on the video display terminal.

2. (Original) The system of claim 1 further comprising transmission means connected with said conversion means for transmitting said digital code to a remote location.

3. (Original) The system of claim 2 further comprising:

reception means at said remote location connected with said transmission means for receiving said digital code transmitted by said transmission means; and

remote video display means connected with said reception means for displaying said digital code received from said reception means, said remote video display means showing an image substantially the same as that shown on the video display terminal to allow a user to determine the operational status of the data processing device.

4. (Original) The system of claim 3 wherein said digital code is transmitted to said remote location in response to a command received from said remote location requesting that said digital code be transmitted.

5. (Original) The system of claim 4 further comprising interconnection means for interconnecting a plurality of said computer monitoring systems with one another and for allowing a user at said remote location to selectively access any one of said computer monitoring systems.

6. (Original) The system of claim 1 further comprising:

memory means connected with said conversion means for storing said digital code to retain an image of said information displayed on the video display terminal; and

control means connected to said memory means and said conversion means for monitoring changes to said image and for storing said digital code representative of said changes in said memory means, such that said memory means contains a series of image frames that can be used by an operator to determine the cause of a system failure.

7. (Original) The system of claim 1 further comprising:

training means connected to said character determination means for generating a predetermined character display, for operating said character determination means to generate digital codes representative of an identity of each character in said

predetermined character display, and for storing said digital codes generated by said character determination means; and

comparison means connected with said training means and said character determination means for comparing digital codes generated by said character determination means for an unknown display on said video display terminal with said digital codes representative of each character on said predetermined display, such that said identity of each character displayed on said unknown display can be determined.

8. (Original) The system of claim 1 further comprising:

synchronization signal input means for receiving from the data processing device a horizontal synchronization signal; and

pixel clock generating means connected with said synchronization signal input means and said conversion means for generating a pixel clock signal.

9. (Original) The system of claim 1 wherein said data processing device is a personal computer, and said video raster signal input means comprises a circuit interconnected between said personal computer and the video display terminal.

10. (Original) The system of claim 2 wherein said transmission means comprises a standard public switched telephone line.

11. (Original) A method of receiving, analyzing and converting information contained in an analog video raster signal generated by a data processing device and displayed on a video display terminal associated with the data processing device, into a digital representation of that information comprising the steps of:

receiving the analog video raster signal generated by the data processing device;

converting said analog video raster signal into a digital signal representative of said information contained in said video raster signal,

said converting step including the steps of:

determining an identity of each character displayed on the video display terminal; and

generating a digital code indicative of said identity of said each character displayed on the video display terminal,

wherein said step of generating a digital code comprises the step of generating a series of cyclic redundancy checks from pixel information associated with each character location on the video display terminal.

12. (Original) The method of claim 11 further comprising the step of transmitting said digital codes to a remote location.

13. (Original) The method of claim 12 further comprising the steps of:

receiving said digital codes transmitted to said remote location; and

displaying said digital codes to create an image substantially the same as that shown on the video display terminal to allow a user to determine an operational status of the data processing device.

14. (Original) The method of claim 13 wherein said step of transmitting said digital codes to said remote location is performed in response to a command received from said remote location requesting that said digital codes be transmitted.

15. (Original) The method of claim 12 wherein said digital codes are transmitted to said remote location using a standard public switched telephone line.

16. (Original) The method of claim 11 further comprising the steps of:

analyzing a predetermined character sequence displayed on the video display terminal to determine an identity of each character displayed on said video display terminal;

generating a digital code representative of each character in said predetermined character sequence displayed on said video display terminal; and

storing said digital codes in a memory.

17. (Original) The method of claim 11 further comprising the steps of:

receiving a horizontal synchronization signal from the data processing device; and

generating a pixel dock signal in synchronization with said horizontal synchronization signal.

18. (Original) The method of claim 11 wherein said data processing device is a personal computer, and said video raster signal is intercepted between said personal computer and the video display terminal.

19. (Original) A computer implemented method of converting information contained in a video raster signal generated by a data processing device and displayed on a video display terminal associated with the data processing device, into a digital representation of that information comprising the computer implemented steps of:

receiving the video raster signal generated by the data processing device; and

converting said video raster signal into a digital signal representative of said information contained in said video raster signal,

said converting step including the steps of:

determining an identity of each character displayed on the video display terminal; and

generating a digital code indicative of said identity of said each character displayed on the video display terminal,

wherein said step of generating a digital code comprises the step of generating a series of cyclic redundancy checks from pixel information associated with each character location on the video display terminal.

20. (Original) A computer monitoring system for monitoring information contained in an analog video raster signal generated by a data processing device and displayed on a video display terminal connected to the data processing device and for convening the information contained in the analog video raster signal into a digital representation of that information for transmission to a remote location comprising:

analog video raster signal input means connected with the data processing device for receiving said analog video raster signal generated by said data processing device;

conversion means connected to said analog video raster signal input means for receiving said analog video raster signal and for converting said analog video raster signal into a digital signal comprising a plurality of digital codes representative of information contained in said analog video raster signal, said conversion means comprising processing means for analyzing said analog video raster signal, for determining an identity of each character displayed on the video display terminal, and for generating at least one of said plurality of digital codes, said at least one of said plurality of digital codes being indicative of said identity of said each character displayed on the

video display terminal.

21. (Original) A computer monitoring system for monitoring information contained in an analog video raster signal generated by a data processing device and displayed on a video display terminal connected to the data processing device and for converting the information contained in the analog video raster signal into a digital representation of that information for transmission to a remote location comprising:

analog video raster signal input means connected with the data processing device for receiving said analog video raster signal generated by said data processing device;

conversion means connected to said analog video raster signal input means for receiving said analog video raster signal and for converting said analog video raster signal into a digital signal comprising a plurality of digital codes representative of information contained in said analog video raster signal, said conversion means comprising processing means for analyzing said analog video raster signal, character determination means for determining an identity of each character displayed on the video display terminal and for generating a digital code indicative of said identity of said each character displayed on the video display terminal and for generating at least one of said plurality of digital codes, said at least one of said plurality of digital codes being indicative of said identity of said each character displayed on the video display terminal; and

training means connected to said character determination means for generating a predetermined character display, for operating said character determination means to generate digital codes representative of an identity of each character in said

predetermined character display, and for storing said digital codes generated by said character determination means.

22-122. (Canceled).

123. (Previously presented) A computer monitoring system comprising:

plural host computer sites, each host computer site having at least one host computer, the at least one host computer including a host processor, a host input device, and a host display device;

a remote processor situated at a remote site, the remote processor having a remote display device and a remote input device connected thereto;

a network linking the remote site and each of the plural host computer sites, the network facilitating a first connection between a first selected host computer at a first host computer site and the remote site, and during the first connection either:

(a) transmitting screen data from the host display device of the first selected host computer to the remote display device, and

(b) transmitting input signals from the remote input device to the first selected host computer for controlling the first selected host computer;

an on-screen display process, execution of the on-screen display process at the remote site providing a pop-up screen on the remote display device, the pop-up comprising a menu identifying the host computers at the plural host computer sites, the pop-up screen at least overlaying the video appearing on the remote display device as a result of the first connection; whereupon operation of the remote input device in response to the menu of the pop-up screen causes the remote site to terminate the first connection

and to establish a second connection between a second selected host computer and the remote site.

124. (Previously presented) The apparatus of claim 123, wherein the second selected host computer is situated at a second host computer site.

125. (Previously presented) The apparatus of claim 123, wherein at least one of the plural host computer sites comprises a network of host computers.

126. (Previously presented) The apparatus of claim 125, wherein at least one of the plural host computer sites comprises a daisy chained configuration of host computers.

127. (Previously presented) The apparatus of claim 125, wherein at least one of the plural host computer sites comprises a daisy chained configuration of host computers, the daisy chain configuration including a host unit associated with each of the host computers, wherein for each of the host computers the host unit is connected between the host computer and a source of power for the host computer, and wherein upon receipt of the cold boot command from the remote site the host unit temporarily interrupts power to the host processor of the host computer.

128. (Previously presented) The apparatus of claim 125, wherein at least one of the plural host computer sites comprises a daisy chained configuration of host computers, the daisy chain configuration including a host unit associated with each of the host computers, wherein for at least one of the host computers the host unit is connected between the host processor and at least one of the host input device and the host display device of the at least one of the host computers.

129-135. (Canceled).

136. (Previously presented) A system for interfacing digitized keyboard signals with a computer processor generating analog video signals, comprising:

a remote access facility;

a non-dedicated serial channel; and

a computer access interface receiving from the remote access facility via the non-dedicated serial channel the digitized keyboard signals and transmitting to the remote access facility via the non-dedicated serial channel a digitized version of the analog video signals, wherein the non-dedicated serial channel is between the remote access facility and the computer access interface.

137. (Previously presented) The system of claim 136, wherein the channel includes a network.

138. (Previously presented) The system of claim 136, wherein the channel includes a wireline.

139. (Previously presented) The system of claim 136, wherein the channel includes a modem-to-modem communication channel.

140. (Previously presented) The system of claim 136, wherein the computer processor includes a computer keyboard port and a computer video device port, the computer access interface including a dedicated link to the keyboard port for transmitting the keyboard signals to the computer processor and including another dedicated link to the video device port for receiving the analog video signals from the computer processor.

141-143. (Canceled).

144. (Previously presented) The system of claim 136, wherein the computer access interface further receives computer keyboard commands from the computer processor and transmits the keyboard commands on the non-dedicated serial channel to the remote access facility.

145. (Previously presented) The system of claim 136, wherein the computer access interface further receives computer mouse commands from the computer processor and transmits the mouse commands on the non-dedicated serial channel to the remote access facility.

146. (Previously presented) The system of claim 136, wherein the computer access interface determines changes in the analog video signals and produces the digitized version of the analog video signals in accordance with the changes.

147. (Previously presented) The system of claim 136, wherein the computer access interface analyzes characteristics of the analog video signals and produces the digitized version of the analog video signals in accordance with results of said analysis of the analog video signal characteristics.

148. (Previously presented) The system of claim 147, wherein the analog video signals include RGB information including RGB components and wherein the computer access interface produces the digitized version of the analog video signals by applying a digitization process to each RGB component of the RGB information.

149. (Previously presented) The system of claim 148, wherein the digitization process includes analyzing phase characteristics of each RGB component.

150. (Previously presented) The system of claim 148, wherein the digitization process includes analyzing amplitude characteristics of each RGB component.

151. (Previously presented) The system of claim 136, wherein the computer access interface includes hardware defining at least a local video port and wherein the computer access interface supports a video pass-thru mode for continuously applying the video signal to the local video port of the computer access interface.

152. (Previously presented) The system of claim 136, wherein the computer processor receives AC power and the computer access interface receives a request to break the AC power and then coordinates a break in the AC power to the computer processor.

153. (Previously presented) The system of claim 152, further including a power break component receiving the AC power and delivering the AC power to the computer processor, wherein the computer access interface delivers a power break command signal to the power break component upon receipt of the request to break.

154. (Previously presented) The system of claim 136, wherein the computer access interface includes a page alert process generating an outgoing phone call to a predefined page number whenever a remote access user of the remote access facility fails to enter an appropriate access code.

155. (Previously presented) The system of claim 136, wherein the computer access interface generates a predefined audio signal whenever a remote access user establishes communication with the computer access interface via the remote access facility.

156. (Previously presented) The system of claim 136, wherein the computer access interface generates a predefined visual signal whenever a remote access user establishes communication with the computer access interface via the remote access facility.

157. (Previously presented) A system for monitoring a host computer from a remote processor the host computer including a host processor and a host display device port and the remote processor including a remote display device comprising:

a host unit connected between the remote processor and the host computer which (1) causes screen data output on the host display device port to appear also on the remote display device whereby at least a situation requiring a reset operation appears at the host unit and (2) upon receipt of a reset command, causes the host unit to initiate a reset operation of the host computer.

158. (Previously presented) The system of claim 157, wherein the host unit also automatically causes a reset operation whenever a connection between the remote processor and the host unit is terminated.

159. (Previously presented) The system of claim 157, wherein the host unit receives communications from the remote processor via a telephone carrier signal and the host unit includes a carrier detect circuit and automatically causes the reset operation upon a determination made by the carrier detect circuit of the absence or presence of the carrier signal.

160. (Previously presented) A method of monitoring a computer system comprising:

providing a host unit between a host computer and a remote processor; the host computer including a host processor and a host display device port, the remote processor including a remote display device;

using the host unit to cause screen data output on the host display device port to appear also on the remote display device whereby at least a situation requiring a reset operation appears at the host unit; and

receiving a reset command at the host unit and thereupon causing the host unit to initiate a reset operation of the host computer.

161. (Previously presented) The method of claim 160, wherein the host unit also automatically causes a reset operation whenever a connection between the remote processor and the host unit is terminated.

162. (Previously presented) The method of claim 161, further including the steps of receiving communications from the remote processor at the host unit via a telephone carrier signal and wherein the host unit includes a carrier detect circuit and automatically causes the reset operation upon a determination made by the carrier detect circuit of the absence or presence of the carrier signal.

163-164. (Canceled).

165. (Currently Amended) A system, comprising:

a user station, comprising:

an analog video source generating analog video signals;

an analog video port exhibiting the analog video signals;

a video display connected to the video port to retrieve from the port the analog video signals and to display the retrieved analog video signals;

a video processor to receive, digitize and packetize the analog video signals into packeted digital video signals;

a network connector to establish a logical digital data path from the user station to a remote station and to deliver the packeted digital video signals onto the established logical digital data path;

a keyboard port for keyboard signals, the network connector also delivering keyboard signals from the remote station to the keyboard port via the established logical digital data path;

a mouse port for mouse signals, the network connector also delivering mouse signals from the remote station to the mouse port via the established logical digital data path; and

a processor to retrieve the keyboard and mouse signals from the remote station and to instruct the analog video source to generate new analog video signals based on the retrieved keyboard and mouse signals.

166. (Previously presented) A user station as in claim 165 wherein the network connector includes a modem.

167. (Previously presented) A user station as in claim 165 wherein the network connector includes a router to read addresses on the packeted digital video signals and route the packeted digital video signals along the established logical digital data path based on the addresses.

168. (Previously presented) The system according to claim 165, further comprising:

a plurality of user stations;

the system further comprising:

a remote computer, having:

a data entry device port to receive entry device data entered from a standard keyboard or mouse; and

a video processor to receive, de-digitize and de-packetize the packeted digital video signals back into the analog video signals.

169. (Previously presented) A system for controlling a target computer from a remote workstation of the type that includes a keyboard, a mouse, and a monitor, comprising:

a host processor and associated video memory and keyboard/mouse buffers;

a video digitizer coupled to the host processor that receives analog video signals from the target computer, samples the video signals, and stores the video signals in the video memory;

a keyboard/mouse interface that receives keyboard and mouse signals from the remote workstation and stores them in the keyboard/mouse buffers; and

the host processor operating a remote access and control program that transmits the contents of the video memory to the remote workstation and receives the contents of the keyboard/mouse buffers from the target computer, both over a communication link.

170. (Previously presented) The system of claim 169, wherein the host computer receives the keyboard and mouse signals from the remote workstation, stores the received keyboard and mouse signals in the buffers and forwards the contents of the keyboard/mouse buffers to a keyboard and mouse input on the target computer.

171. (Canceled).

172. (Previously presented) The system of claim 169, wherein the communication link is a telephone line.

173. (Previously presented) The system of claim 169, wherein the communication link is a logical data path.

174. (Previously presented) The system of claim 169, wherein the communication link is a network.

175. (Previously presented) The system of claim 169, wherein the video digitizer includes a phase lock loop that produces a clocking signal having a frequency substantially equal to the time at which pixel values are transmitted in the video signal and a gating counter that passes the clocking signal to an analog to digital converter that samples the video signal during an active video portion of the video signal.

176. (Previously presented) The system of claim 169, wherein the video digitizer alternatively samples a single color video signal in a frame of video data and stores the samples in the video memory.

177. (Previously presented) A video digitizer for receiving analog video signals at a plurality of resolutions and for storing the video signals in a video memory of a host computer comprising:

a synchronize detect circuit that detects vertical and horizontal synchronize signals from an analog video signal;

a microprocessor that determines a clocking rate at which the analog video signal should be sampled from the timing of the vertical and horizontal synchronize signals;

a clock signal generator that produces a clock signal at the clocking rate;

an analog to digital converter that is controlled by the clock signal to sample the analog video signal, and

a bus interface circuit that writes the samples of the analog video signal into the video memory of the host computer.

178. (Previously presented) The video digitizer of claim 177, wherein the clock signal generator comprises:

a phase lock loop circuit that compares the phase of the horizontal synchronize signal with the phase of a divided clocking signal;

a variable oscillator that produces the clocking signal that controls the analog to digital converter, wherein the clocking signal has a frequency that is dependent on the difference in phase between the horizontal synchronize signal and the divided clocking signal; and

a programmable divider that receives the clocking signal produced by the variable oscillator and produces the divided clocking signal that is fed to the phase lock loop circuit.

179. (Previously presented) The video digitizer of claim 178, further comprising a gating circuit that receives the clocking signal and passes the clocking signal to the analog to digital converter during an active video portion of the analog video portion of the analog video signal.

180. (Previously presented) The video digitizer of claim 178, further comprising a phase adjust circuit that adjusts the phase of the clocking signal.

181. (Previously presented) The video digitizer of claim 177, further comprising a selection circuit that alternatively selects a red, green, and blue component on the analog video signal to be sampled by the analog to digital converter.

182. (Previously presented) The video digitizer of claim 177, wherein the analog to digital converter includes separate analog to digital converters to sample the red, green, and blue components of the analog video signal.

183. (Previously presented) The video digitizer of claim 177, wherein the host computer operates a remote access and control program that transmits the contents of the video memory to a remote computer system.

184-185. (Canceled).

186. (Presently amended) A system for interfacing keyboard signals with a selected computer processor generating video signals, comprising:

an on-screen display generator to create a menu for a monitor associated with the keyboard signals, said menu listing the selected computer processor among a plurality of other computer processors for selection by a user of the monitor;

a network access device to interface with a network including the plurality of computer processors and the selected computer processor;

a video interface to receive information indicative of the video signals from the network via the network access device;

a keyboard interface to read the keyboard signals and to deliver the keyboard signals to the selected computer processor via the network and the network access device.

187. (Previously presented) A system according to claim 186, also for interfacing mouse signals with the selected computer processor, further comprising:

a mouse interface to read the mouse signals and to deliver the mouse signals to the selected computer processor via from the network and the network access device.

188. (Previously presented) A system according to claim 186, wherein:

the keyboard interface communicates with the selected computer processor through a keyboard port of the selected computer processor.

189. (Previously presented) A system according to claim 187, wherein:

the mouse interface communicates with the selected computer processor through a mouse port of the selected computer processor.

190. (Previously presented) A system according to claim 188, further including:

an on-screen display generator to create a menu for a monitor associated with the keyboard signals, said menu listing the selected computer processor among a plurality of computer processors for selection by a user of the monitor.

191-192. (Canceled).

193. (Previously presented) A system, comprising:

a hardware host unit coupled to a host computer different from the hardware host unit; and

a remote computer software utility, located at a remote site computer, comprising:

a connection utility to establish a communication session with the host unit over a communication link; and

a pop up menu utility providing at least a user choice at the remote site computer to obtain access to the host computer via the communication utility.

194. (Previously presented) A computer monitoring system for monitoring the information displayed on a video display terminal connected to, and receiving display information from, a data processing device comprising:

a microprocessor controlled computer hardware device working even if the data processing device is locked up and no longer processing data or input commands, wherein the microprocessor controlled computer hardware device includes a video raster signal input circuit for receiving a video raster signal representative of the information displayed on the video display terminal from the data processing device and a converter communicating with the video raster signal input circuit to convert the video raster signal into a digital signal representative of the information contained in the video raster signal.

195. (Previously presented) The system according to claim 194, wherein said converter comprises a character determiner for determining the identity of each character displayed on the video display terminal and for generating a digital code indicative of the identity of said each character displayed on the video display terminal, and

wherein said character determiner comprises circuitry for generating a series of cyclic redundancy checks, wherein each said cyclic redundancy check is generated from the pixel information associated with each character location on the video display terminal.

196. (Previously presented) The system according to claim 195, further comprising a transmitter coupled to said converter for transmitting said digital code to a remote location.

197. (Previously presented) The system according to claim 196, further comprising:

a receiver at said remote location coupled to said transmitter for receiving said digital codes transmitted by said transmitter; and

a remote video display coupled to said receiver for displaying said digital codes received from said receiver, said display showing an image sufficiently similar to that shown on the video display terminal to allow a user to determine the operational status of the data processing device.

198. (Previously presented) The system according to claim 195, wherein said digital codes are transmitted to said remote location in response to a command received from said remote location requesting that said digital codes be transmitted.

199. (Previously presented) The system according to claim 195, further comprising a network for interconnecting a plurality of said microprocessor controlled computer hardware devices with one another and for allowing a user at said remote location to selectively access any one of said microprocessor controlled computer hardware devices or its associated data processing device.

200. (Previously presented) The system according to claim 195, further comprising:

a memory connected with said converter for storing said digital codes to retain an image of the information displayed on the video display terminal; and

a controller coupled to said memory and said converter for monitoring changes to said image and for storing said digital codes representative of said changes in said memory, whereby said memory contains a series of image frames that can be used by an operator to determine the cause of a system failure.

201. (Previously presented) The system according to claim 195, further comprising:

a trainer coupled to said character determiner for generating a predetermined character display and for storing said digital codes generated by said character determiner representative of each character on said predetermined display; and

a comparator communicating with said trainer and said character determiner for comparing said digital codes generated for an unknown display on said video display terminal with said digital codes representative of each character on said predetermined display, whereby the identity of each character displayed on said unknown display can be determined.

202. (Previously presented) The system according to claim 195, further comprising a synchronization signal input circuit for receiving from the data processing device a horizontal synchronization signal, and a pixel clock generator connected with said synchronization signal input circuit and said converter for generating a pixel clock signal,

wherein said data processing device is a personal computer, and said video raster signal input circuit comprises a circuit interconnected between said personal computer and the video display terminal.

203. (Previously presented) The system according to claim 195, wherein the data processing device is a personal computer, wherein the video raster signal input circuit is coupled to said personal computer for receiving a video raster signal and a horizontal synchronization signal from said personal computer, and wherein the system further comprises:

a video signal output circuit coupled to said video display terminal and said video signal input circuit for supplying said video raster signal and said horizontal synchronization signal to said video display terminal;

a host site command input circuit located with said personal computer for receiving commands from a host site user to be processed by said personal computer;

a command output circuit coupled to said local command input circuit and with a standard keyboard interface of said personal computer for supplying commands to be processed by said personal computer to said standard keyboard interface of said personal computer;

a transmitter coupled to said converter and said command output circuit for transmitting said digital signal to a remote location and for transmitting commands received from said remote location to said command output circuit;

a remote command input circuit at said remote location coupled to said transmitter for receiving commands to be transmitted to and executed by said personal computer; and

a remote video display for receiving said digital signals representative of the information contained in said video raster signal and for displaying said signals to allow a user at said remote location to view the information displayed on said video display terminal coupled to said personal computer,

wherein the converter comprises a pixel clock generator for generating a pixel clock signal;

whereby computer service personnel at the remote location can determine the present operating status of the file server, determine repair action to be taken if necessary, and initiate said repair action by transmitting commands to be executed by said personal computer to said personal computer.

204. (Previously presented) A method of converting the information contained in a video raster signal generated by a data processing device and displayed on a video display terminal associated with the data processing device, into a digital representation of that information for monitoring the information, the method comprising:

receiving the video raster signal; and

converting the video raster signal into a digital signal representative of the information contained in the video raster signal independently from the data processing device.

205. (Previously presented) The method according to claim 204, wherein said converting step includes the steps of determining the identity of each character displayed on the video display terminal and generating a digital code indicative of the identity of said each character displayed on the video display terminal, wherein said step of generating a digital code comprises the step of generating a series of cyclic redundancy checks from the pixel information associated with each character location on the video display terminal.

206. (Previously presented) The method according to claim 205, further comprising the step of transmitting said digital codes to a remote location.

207. (Previously presented) The method according to claim 206, further comprising the steps of:

receiving said digital codes transmitted to said remote location; and

displaying said digital codes received from said remote location to create an image sufficiently similar to that shown on the video display terminal to allow a user to determine the operational status of the data processing device.

208. (Previously presented) The method according to claim 205, wherein said step of transmitting said digital codes to said remote location is performed in response to a command received from said remote location requesting that said digital codes be transmitted.

209. (Previously presented) The method according to claim 205, further comprising the steps of:

analyzing a predetermined character sequence displayed on the video display terminal to determine the identity of each character displayed on said video display terminal;

generating a digital code representative of each character in said character sequence displayed on said video display terminal; and

storing said digital codes in a memory, whereby future unknown screen displays can be compared with said digital codes to determine the identity of characters displayed on said future unknown screen displays.

210. (Previously presented) The method according to claim 204, further comprising the steps of:

receiving a horizontal synchronization signal from the data processing device; and

generating a pixel clock signal in synchronization with said horizontal synchronization signal, wherein said data processing device is a personal computer, and said video raster signal in intercepted between said personal computer and the video display terminal.

211. (Previously presented) A circuit module for a computer having in operation therein a remote access engine to communicate between a host server and a remote workstation, comprising:

a main CPU to coordinate a digital to analog conversion of host video signals from the host server;

a field programmable gate array, in communication with the main CPU;

a video interface circuit, in communication with the field programmable gate array, to capture the host video signals for the main CPU and field programmable gate array;

a video RAM to store host video signals digitized by the main CPU and field programmable gate array, and to deliver the digitized video signals to the remote access engine for delivery to the remote computer, the video RAM in communication with the field programmable gate array to receive at least video sync processing from the field programmable gate array;

at least one of a mouse driver circuit and a keyboard driver circuit, in communication with the main CPU, to receive, respectively, mouse and keyboard information from the remote computer;

a bus controller, in communication with the field programmable gate array, to communicate information identifying the digitized host video signals and the mouse and keyboard information to the remote access engine.

212. (Previously presented) A remote access system communicating with a digital network transmission medium to communicate user input signals from a remote computer to a

host computer via the transmission medium and video signals from the host computer to the remote computer via the transmission medium, comprising:

a user input process to capture the user input signals for digital transmission to the host computer;

a video process to capture the video input signals, digitize them and format them for transmission to the remote computer, even when the host computer has locked up to no longer accept any user input signals;

a standard remote access engine:

to communicate the user input signals on the transmission medium between the host and remote computers, and

to communicate the video signals, in digital format, on the transmission medium between the host and remote computers, even when the host computer has locked up to no longer accept any user input signals.

213. (Previously presented) A circuit module for a computer having in operation therein a remote access engine to communicate between a host server and a remote workstation, including:

video buffer circuits to receive, respectively, red, green and blue analog video signals from the host server;

sync polarity circuits to receive, respectively, horizontal and vertical sync signals from the host server;

analog to digital converters communicating with the video buffer circuits to receive the red, green and blue analog video signals and convert them to digital video signals;

a phase locked loop video dot clock circuit communicating with the sync polarity circuits and outputting a dot clock signal;

a TTL converter receiving the digital video signals and converting them to a TTL format; and

a video processing circuit, including a cpu and a programmable gate array, connected to the sync polarity circuits, the phase locked loop video dot clock circuit, and the TTL converter to automatically determine a graphics mode of the red, green and blue analog video signals.

214. (Previously presented) A circuit module according to claim 213, wherein the programmable gate array includes circuitry to determine a video frame rate characteristic of the red, green and blue analog video signals.

215. (Previously presented) A circuit module according to claim 213, wherein the graphics mode includes a number of available colors.

216. (Previously presented) A circuit module according to claim 213, wherein the graphics mode includes a screen resolution in horizontal pixels per screen by vertical pixels per screen.

217. (Previously presented) A circuit module according to claim 213, wherein the graphics mode includes a table characterizing a number of available colors versus a screen resolution in horizontal pixels per screen by vertical pixels per screen.

218. (Previously presented) A circuit module according to claim 213, wherein the video processing circuit includes memory to store a set of predefined video graphics mode characteristics, and wherein the video processing circuit further divides the red, green and blue analog video signals into one or more video screen segment parts and compares the video screen segment parts to the stored predefined video graphics mode characteristics.

219. (Previously presented) A circuit module according to claim 218, wherein the video processing circuit includes a video checksum manager for storing and managing checksums associated with each video screen segment part.

220. (Previously presented) A computer having a virtual path communication link with a remote computer over a network medium, comprising:

a remote access engine;

a data bus;

a set of circuit modules in communication with a set of corresponding host computers to receive analog video signals from the corresponding host computers, to digitize the analog video signals, to synchronize the video signals to a video display characteristic of the remote computer, and to present the digitized and synchronized video signals to the data bus;

a communication port establishing a network connection via the network medium between the remote access engine and a selected one of said set of circuit modules to receive the digitized and synchronized video signals and to deliver the selected digitized video signals to the remote computer for display.

221. (Previously presented) A computer according to claim 220, wherein:

each circuit module includes:

a main CPU to coordinate a digital to analog conversion of host video signals from a corresponding host computer;

a field programmable gate array, in communication with the main CPU;

a video interface circuit, in communication with the field programmable gate array, to capture the host video signals for the main CPU and field programmable gate array;

a video RAM to store host video signals digitized by the main CPU and field programmable gate array, and to deliver the digitized video signals to the remote access engine for delivery to the remote computer, the video RAM in communication with the field programmable gate array to receive at least video sync processing from the field programmable gate array;

at least one of a mouse driver circuit and a keyboard driver circuit, in communication with the main CPU, to receive, respectively, mouse and keyboard information from the remote computer;

a bus controller, in communication with the field programmable gate array, to communicate information identifying the digitized host video signals and the mouse and keyboard information to the remote access engine.

222. (Previously presented) A remote access device to remotely control a host computer and to receive at a remote location a video signal from the host computer, comprising:

a remote access engine between the host computer and the remote location to coordinate delivery of data packets along a telecommunications link between the host computer and the remote location; and

a remote access controller, including a remote access control card communicating with the telecommunications link, to read a present caller ID associated with the remote location, to store a list of predefined caller IDs, to compare the present caller ID with the list and to disable the remote access engine whenever the present caller ID fails to match any from the list of predefined caller IDs.

223. (Previously presented) A remote access device according to claim 222, wherein the remote access controller further includes a telephone jack to automatically issue a page alert to a predefined telephone number whenever the present caller ID fails to match any from the list of predefined caller IDs.

224. (Previously presented) A remote access device according to claim 222, wherein the remote access controller further resets the host computer wherever the predefined caller ID matches the present caller ID.

225. (Previously presented) A remote access device according to claim 222, wherein the remote access controller further reboots the host computer wherever the predefined caller ID matches the present caller ID.

226. (Previously presented) A remote access device according to claim 222, further including an external modem and a control module providing AC power to the host computer, the external modem communicating with the control module and automatically answering calls received by the external modem on a different telecommunications link, said control module

temporarily interrupting power to the host computer whenever said external modem automatically answers a call.

227. (Previously presented) A computer circuit coupled to a data bus and communicating with a Host PC, comprising:

a video input buffering circuit receiving RGB video signals from the Host PC;

an analog to digital converter circuit coupled to the video input buffering circuit to receive and digitize the RGB video signals;

a main gate array circuit to receive the digitized RGB video signals from the analog to digital converter circuit;

a video memory circuit to store the digitized RGB video signals;

a second gate array circuit coupled to the main gate array circuit, the second gate array circuit bridging data between the main gate array circuit and the data bus;

a system clock circuit providing clock signals to the main and second gate array circuits;

a main cpu, communicating with the main and second gate array circuits to direct data between the video memory circuit and the second gate array circuit, the main gate array also controlling data traffic between the analog to digital converter circuit, the video memory circuit, and the main cpu;

a keyboard cpu in communication with the main cpu and at least one of an external keyboard and an external mouse; and

a pixel clock generator to provide a pixel clock signal to the analog to digital converter circuit, the pixel clock generator reproducing in frequency and phase a host

pixel clock signal used by the Host PC to produce the RGB video signals received by the video input buffering circuit.

228. (Previously presented) A computer circuit according to claim 227, wherein the video memory is a combination of interleaved video RAMs.

229. (Previously presented) A computer circuit according to claim 227, wherein the video input buffering circuit includes operational amplifiers, one for each R, G, and B component of the RGB video signal.

230. (Previously presented) A computer circuit according to claim 227, wherein the main gate array circuit includes a checksum section to determine a checksum difference between two video frames of the RGB video signal.

231. (Previously presented) A computer circuit according to claim 227, wherein the main gate array circuit includes a checksum section to determine a checksum difference between two video frames of the RGB video signal and delivers the checksum difference to the second gate array circuit.

232. (Previously presented) A computer circuit according to claim 227, wherein the video memory circuit includes a video RAM and a palette RAM, the main gate array circuit including a checksum section to derive a checksum difference between video frame information in the video RAM versus the palette RAM.

233. (Previously presented) A computer circuit according to claim 227, wherein the second gate array circuit includes a timing and control section.

234. (Previously presented) A computer circuit according to claim 227, wherein the second gate array circuit includes a video format decoding section.

235. (Previously presented) A computer circuit according to claim 227, wherein the second gate array circuit including a video latch area.

236. (Previously presented) A computer circuit according to claim 227, wherein the pixel clock generator includes a phase locked loop.

237. (Previously presented) A computer circuit according to claim 227, wherein the second gate array circuit includes a video format decoding section generating a vertical blanking period signal and the pixel clock generator includes a sample and hold circuit receiving the vertical blanking period signal at a hold input of said sample and hold circuit, said sample and hold circuit having a hold period greater than a maximum vertical blanking period.

238. (Previously presented) A computer circuit according to claim 227, further including:

an ID switch to uniquely identify the circuit communicating with the Host PC in comparison to other circuits communicating with other Host PCs via the data bus.

239. (Previously presented) A circuit for communicating RGB video information from a Host computer to a remote computer via a network link, comprising:

video input circuitry to receive the RGB video information from the Host computer;

video processing circuitry to digitize the RGB video information and to decode a video format of the RGB video information received by the video input circuitry; and

a flash palette converter circuit, including:

an address mux receiving the digitized RGB video information as a stream of digital RGB pixel data;

a flash palette converter RAM being addressed by the stream of digital RGB pixel data and outputting for each RGB pixel a palette index byte corresponding to a color value of said RGB pixel.

240. (Previously presented) A circuit according to claim 239, further including a pixel assembly circuit to condense a number of palette index bytes into a single assembled pixel byte for storage, including:

a logic array receiving the video format of the RGB video information from the video processing circuitry and receiving the palette index byte from the flash palette converter circuit; and

a set of flip-flops controlled by the logic array to assemble the number of palette index bytes as a function of a characteristic of the video format of the RGB video information.

241. (Previously presented) A remote access PC to facilitate communications between a host computer and a remote computer distantly located relative to each other, comprising:

a remote access process to establish a logical data path between the host computer and the remote computer;

a control module having an AC power input to receive AC power from an external power source, an AC power output to deliver the AC power from the external power source to the host computer, a switch therebetween, and a control data input to receive a reboot signal and thereupon interrupt AC power to the host computer by operation of the switch;

a communication circuit establishing a different logical data path between the remote computer and the communication circuit, the communication circuit delivering the reboot signal to the control module when commanded to do so by the remote computer via the different logical data path.

242. (Previously presented) A remote access PC according to claim 241, wherein the communication circuit is a modem.

243. (Previously presented) A remote access device for communicating real time video signals from a host PC to a remote PC and for communicating mouse signals entered in response to the real time video signals from the remote PC to the host PC, comprising:

a video process to capture and digitize the video signals from the host PC including video signals indicating a position of a mouse pointer on a monitor associated with the host PC, the position of said mouse pointer identified by the video process being delayed by a period associated with the capturing and digitizing steps;

a mouse synchronizer to capture a current mouse position of the mouse pointer on the monitor associated with the remote PC;

a video application to communicate the current mouse position of the mouse pointer on the monitor associated with the remote PC to the host PC whereupon the host PC jumps the host mouse pointer to a position coincident with the current mouse position.

244. (Previously presented) A remote access device according to claim 243, wherein the current mouse position is communicated from the remote computer to the mouse synchronizer in the form of current X/Y coordinates of the remote computer mouse pointer.

245. (Previously presented) A remote access device according to claim 243, wherein the mouse synchronizer captures the current mouse position of the mouse pointer on the monitor associated with the remote PC whenever a remote user clicks a mouse button.

246. (Previously presented) A remote access interface between a remote workstation having an associated remote monitor and a host device having an associated host monitor, comprising:

a host mouse;

a video capture circuit to intercept analog video signals from the host device and applying the analog video signals to the host monitor such that the host monitor displays a host pointer associated with the host mouse;

a mouse capture circuit to capture remote mouse signals from the remote workstation over a telecommunication path and to transmit the remote mouse signals to the host device for further processing as though the remote mouse signals were received from the host mouse;

a mouse adjustment process to cause the host pointer on the host monitor to jump to a position determined by the remote mouse signals.

Exhibit 1

1. This office action is in response to Amendment filed 10/10/02. Amended claims 1,12,21 and original claims 1-11,13-20,22-41,43,44,48-51 are pending. Claims 42 and 45-47 are canceled. The rejection is cited as stated below.

Response to Arguments

Applicant's arguments filed 10/10/02 have been fully considered but they are not persuasive to overcome the prior art.

2. As per claim 11, applicant argues the prior art does not teach "a bus controller in communication with the field programmable gate array".

Examiner notes the prior art taught "the control CPU contains an 80C32 micro processor, 32K of RAM memory and 32K of EPROM memory. It is clearly the Control CPU has a control bus connected to EPROM or the field programmable gate array.

As per claim 13, applicant argues the prior art does not teach "the standard remote engine"

Examiner notes the prior art taught remote software or remote programs [col 2 line 5, col 3 line 20] which is equivalent to remote engine.

As per claim 14, applicant argues the prior art does not teach "phase locked loop video dot clock circuit"

Examiner notes the prior art taught the pixel timing circuit connect to video CPU [Fig 4A] using phase lock loop [col 29 lines 28-55]

As per claim 23, applicant argues the prior art does not teach "the present Caller ID with the list and to disable the remote access engine whenever the present Caller ID fails to match any from the list of predefined caller Ids".

Examiner notes the prior art taught host ID number [col 6 line 34, col 11 line 55, col 30 line 60, col 31 lines 35-43, col 46 line 12, col 53 lines 1-20] which is equivalent to caller ID; and remote PC's call list [col 45 lines 64-67]. It is obvious the remote software configured to match the caller host ID to the list to activate or disable.

As per claim 28, applicant argues the prior art does not teach "main gate array circuit" and "second gate array circuit" with "a pixel clock generator".

Examiner notes the prior art taught in Fig 4A : "main gate array circuit" or Video CPU 114 and "second gate array circuit" or video processor 111 with "a pixel clock generator" or pixel timing circuitry 112.

As per claim 40, applicant argues the prior art does not teach "a flash palette converter circuit".

Examiner notes the prior art taught the host unit processor determine the exact procedures needed to convert the color VDAC signal [col 7 line 50-col 8 line 15]

As per claim 43, applicant argues the prior art does not teach "a different logical data path between the remote computer and the communication circuit, communication circuit delivering the reboot signal to the control module when commanded to do so by the remote computer via the different logical data path"

Examiner notes the prior art taught a different way to reboot the remote computer [col 1 lines 10-24, col 58 line 56-col 59 line7].

As per claim 48, applicant argues the prior art does not teach "a mouse synchronizer"

Examiner notes the prior art taught the mouse circuitry connected between the host PC and remote PC by a software program [col 19 line 56-col 20 line 12]. It is well-known in the art that the mouse synchronizer is an inherent feature of software program.

As per claim 51, applicant argues the prior art does not teach "a mouse adjustment process to cause the host pointer on the host monitor to jump to a position determined by the remote mouse signal"

Examiner notes the prior art taught the mouse circuitry connected between the host PC and remote PC by a software program [col 19 line 56-col 20 line 12] and update to the current screen data [col 38 lines 25,45; col 48 lines 47-55]. Thus, the software program could function as the mouse synchronizer and update or jump to a position determined by the remote signal.

3. Claims 1-51 are rejected under 35 U.S.C. § 102[b] as being anticipated over Perholtz et al [Perholtz 5,732,212] .

4. As per claims 11,13,14,21-23,28,40,43,48 and 51 Perholtz discloses the invention substantially as claimed, including a circuit module for a remote access system communicating with a digital network transmission medium to communicate user input signals from a remote computer to a host computer via the transmission

medium and video signals from the host computer to the remote computer via the transmission medium [Abstract], comprising:

a user input process to capture the user input signals for digital transmission to the host computer [col 6 line 26-colcol 7 line 15];

a video process to capture the video input signals, digitize them and format them for transmission to the remote computer, even when the host computer has locked up to no longer accept any user input signals [col 7 lines 16-50];

a standard access engine (i.e.: software program) [col 2 line 5, col 3 line 20] to communicate the user input signals on the transmission medium between the host and remote computers, and to communicate the video signals, in digital format, on the transmission medium between the host and remote computers, even when the host computer has locked up to no longer accept any user input signals [col 7 lines 16-50]

Penholtz also discloses a main CPU (main gate array) [Fig 1], a field programmable gate array (ROM,EEPROM) data bus, RAM [col 20 lines 19-31, col 22 lines 15-24], a video interface circuit, a Video RAM [col 12 line 54-col 13 line 4, col 22 line], a bus controller or adapter, a keyboard/mouse interface [Fig 4A col 7 lines 16-50, col 17 lines 1-12, 65-col 18 line 3, 66-line 20], a network interface (modem, communication port, remote access controller, remote access engine, logical data path)[col 1 lines 25-64, col 5 lines 23-30, col 6 line 26-col 7 line 16, col 8 lines 15-25, 49-67, col 9 lines 15-55], predefined caller ID (ID switch)[col 18 lines 9-28 , RGB video signals [col 24 line 55-col 25 line 25], a system clock [col 19 lines 33-56], a pixel clock generator [Fig 4-A, Fig 4-O, col 9 lines 28-55, col 26 line 1-15, col 28 lines 3-28,58-col

29 lines 27], AC power [col 16 lines 12-18, col 10 lines 29-34,col 12 lines 17-32, col 29 lines 48-60], all operate independently of operating system [col 8 lines 15-25,col 23 lines 35-50, col 30 lines 29-41].

5. As per claim 15, Perholtz discloses the programmable gate array includes circuitry to determine a video frame rate characteristic of the red, green and blue analog video signals col 23 lines 17-50, col 24 lines 55-67,col 34 lines 48-col 35 line 19,33-44]. As per claim 16, Perholtz discloses the graphics mode includes a number of available colors as inherent feature of the graphic mode [col 25 lines 33-40, col 26 lines 15-31,col 54 line 64-col 55 line 33, col 56 lines 50-65].

6. As per claim 17, Perholtz discloses the graphics mode includes a screen resolution in horizontal pixels per screen by vertical pixels per screen as inherent feature of graphic mode [col 25 lines 33-40, col 26 lines 15-31,col 54 line 64-col 55 line 33, col 56 lines 50-65].

7. As per claim 18, Perholtz discloses the graphics mode includes a table characterizing a number of available colors versus a screen resolution in horizontal pixels per screen by vertical pixels per screen as inherent feature of graphic mode [col 25 lines 33-40, col 26 lines 15-31,col 54 line 64-col 55 line 33, col 56 lines 50-65].

8. As per claim 19, Perholtz discloses the video processing circuit includes memory to store a set of predefined video graphics mode characteristics, and wherein the video processing circuit further divides the red, green and blue analog video signals into one or more video screen segment parts and compares the video screen segment parts to the stored predefined video graphics mode characteristics as inherent feature of graphic

mode [col 25 lines 33-40, col 26 lines 15-31,col 54 line 64-col 55 line 33, col 56 lines 50-65].

9. As per claim 20, Perholtz discloses the video processing circuit includes a video checksum manager for storing and managing checksums associated with each video screen segment part [Fig 4E].

10. As per claim 24, Perholtz discloses the remote access controller further includes a telephone jack col 11 line 50-col 12 line 15] to automatically issue a page alert to a predefined telephone number whenever the present caller ID [or host ID number] fails to match any from the list of predefined caller Ids [col 59 lines 8-65].

11. As per claims 25,26 Perholtz discloses the remote access controller further resets (reboots) the host computer wherever the predefined caller ID matches the present caller ID [col 7 lines 50, col 8 line 10, 49 line 54, col 58 line 63].

12. As per claim 27, Perholtz discloses including an external modem and a control module providing AC power to the host computer, the external modem communicating with the control module and automatically answering calls received by the external modem on a different telecommunications link, said control module temporarily interrupting power to the host computer whenever said external modem automatically answers a call as inherent feature of modem [Fig 1]

13. As per claim 29, Perholtz discloses the video memory is a combination of interleaved video RAMs [col 22 lines 15-25].

14. As per claim 30, Perholtz discloses the video input buffering circuit includes operational amplifiers, one for each R, G, and B component of the RGB video signal as inherent feature of video RAM.

15. As per claim 31, Perholtz discloses the main gate array circuit includes a checksum section to determine a checksum difference between two video frames of the RGB video signal as inherent feature of main gate array or CPU [Fig 4A col 18 line 42-col 19 line 20].

16. As per claim 32, Perholtz discloses the main gate array circuit includes checksum section to determine a checksum difference between two video frames of the RGB video signal and delivers the checksum difference to the second gate array circuit as inherent feature of main gate array or CPU [Fig 4A col 18 line 42-col 19 line 20].

17. As per claim 33, Perholtz discloses the video memory circuit includes a video RAM and a palette RAM, the main gate array circuit including a checksum section to derive a checksum difference between video frame information in the video RAM versus the palette RAM as inherent feature of main gate array or CPU and video circuit [Fig 4A col 18 line 42-col 19 line 20].

18. As per claim 34, Perholtz discloses the second gate array circuit includes a timing and control section [col 19 lines 33-55].

19. As per claim 35, Perholtz discloses the second gate array circuit includes a video format decoding section as inherent feature of main gate array or CPU and video circuit [col 6 lines 5-25, Fig 4A, col 18 line 42-col 19 line 20].

20. As per claim 36, Perholtz discloses the second gate array circuit including a video latch area Fig 4M-1].

21. As per claim 37, Perholtz discloses the pixel clock generator includes a phase locked loop [col 29 line 55].

22. As per claim 38, Perholtz discloses the second gate array circuit includes a video format decoding section generating a vertical blanking period signal and the pixel clock generator includes a sample and hold circuit receiving the vertical blanking period signal at a hold input of said sample and hold circuit, said sample and hold circuit having a hold period greater than a maximum vertical blanking period as inherent feature of main gate array or CPU and video circuit [col 6 lines 5-25, Fig 4A, col 18 line 42-col 19 line 20].

23. As per claim 39, Perholtz discloses an ID switch to uniquely identify the circuit communicating with the Host PC in comparison to other circuits communicating with other Host PCs via the data bus [col 11 lines 50-col 12 lines 15].

24. As per claim 41, Perholtz discloses a pixel assembly circuit to condense of palette index bytes into a single assembled pixel byte for storage, including a logic array receiving the video format of the RGB video information from the video processing circuitry and receiving the palette index byte from the flash palette converter circuit; and a set of flip-flops controlled by the logic array to assemble the number of palette index bytes as a function of a characteristic of the video format of the RGB video information as inherent feature of pixel timing circuit [col 29 lines 28-55].

25. As per claim 44, Perholtz discloses the communication circuit is a modem [Fig 1].

26. As per claim 49, Perholtz discloses the current mouse position is communicated from the remote computer to the mouse synchronizer in the form of current X/Y coordinates of the remote computer mouse pointer as inherent feature of mouse device [Fig 1].

27. As per claim 50, Perholtz discloses the mouse synchronizer captures the current mouse position of the mouse pointer on the monitor associated with the remote PC whenever a remote user clicks a mouse button as inherent feature of mouse device [Fig 1].

28. Claims 1-10, and 12 are allowable.

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thong Vu, whose telephone number is (703)-305-4643.
The examiner can normally be reached on Monday-Thursday from 8:00AM- 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Mark Powell*, can be reached at (703) 305-9703.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9700.

Any response to this action should be mailed to: Commissioner of Patent and Trademarks, Washington, D.C. 20231 or faxed to :

After Final (703) 746-7238
Official: (703) 746-7239
Non-Official (703) 746-7240

Hand-delivered responses should be brought to Crystal Park 11,2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

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SYSTEM AND METHOD FOR ACCESSING AND OPERATING PERSONAL COMPUTERS REMOTELY

Field of the Invention

This invention relates to remote computer access, and more particularly to hardware and software for coordinating video, keyboard and mouse information transfers and control to/from a remote PC and one or more host PCs.

BACKGROUND AND SUMMARY OF THE INVENTION

Since the introduction of the PC there has been a need to access PCs from remote locations. Initial remote access approaches software based systems, such as pcAnywhere, Reach Out, etc., Such remote access systems are operating system dependent, meaning that the software would only function in association with a particular operating system (i.e. DOS, Windows, Unix, etc) and software upgrades were normally required each time that operating system was enhanced.

Software-only based systems were also intrusive (i.e. the software had to be installed on the Host PC). As a result, the software took resources away from the Host PC and often caused the Host PC to lock up due to incompatibilities between the remote access software and application software running on the Host PC. Moreover, many critical PC applications, such as network file servers, where simply incompatible with all remote access software products. Finally, remote access software failed when the Host PC

WHAT IS CLAIMED IS:

1. A circuit module for a remote access computer, having in operation therein a remote access engine, to communicate between a data bus and the remote access engine, comprising:

a video capture circuit to capture analog video signals created by an external host computer different from the remote access computer, to digitize and packet the captured video signals; and to sync the captured video signals to a video output on an external remote site computer different from the external host computer;

a keyboard/mouse circuit to capture user input signals identifying at least one from the group consisting of keyboard and mouse signals created by the external remote site computer and captured by the remote access engine from the external remote site computer when initiated by the external remote site computer via a network connection.

2. A circuit module according to claim 1, wherein the video capture circuit syncs the captured video signals by deducing a video format characteristic of the analog video signals created by the external host computer.

3. A circuit module according to claim 2, wherein the video format characteristic includes resolution information.

4. A circuit module according to claim 3, wherein the resolution information is created by a VGA card of the host computer.

5. A circuit module according to claim 1, wherein the host computer creates the analog video signals in cooperation with a particular type of operating system existing on the host computer, and the video capture circuit operates independently of the type of operating system existing on the host computer.

6. A circuit module according to claim 1, wherein the video capture circuit communicates with a standard video interface of the host computer.

7. A circuit module according to claim 6, wherein the video capture circuit operates independently of all software operation of the host computer except to receive the output of the standard video interface of the host computer.

8. A circuit module according to claim 7, wherein the video capture circuit syncs the captured video signals by deducing a video format characteristic of the analog video signals created by the external host computer.

9. A circuit module according to claim 1, further including:

a remote access interface cooperating with the remote access engine to deliver the synchronized and digitized video to the external remote site computer via a logical data path established between the remote access interface and the remote site computer.

10. A circuit module according to claim 1, wherein the remote access interface provides the remote site computer with a digitized version of the analog video signals created by the host computer for conversion and display at the remote site computer on essentially a real-time basis.

11. A circuit module for a computer having in operation therein a remote access engine to communicate between a host server and a remote workstation, comprising:

a main CPU to coordinate a digital to analog conversion of host video signals from the host server;

a field programmable gate array, in communication with the main CPU;

a video interface circuit, in communication with the field programmable gate array, to capture the host video signals for the main CPU and field programmable gate array;

a video RAM to store host video signals digitized by the main CPU and field programmable gate array, and to deliver the digitized video signals to the remote access engine for delivery to the remote computer, the video RAM in communication with the field programmable gate array to receive at least video sync processing from the field programmable gate array;

at least one of a mouse driver circuit and a keyboard driver circuit, in communication with the main CPU, to receive,

respectively, mouse and keyboard information from the remote computer;

a bus controller, in communication with the field programmable gate array, to communicate information identifying the digitized host video signals and the mouse and keyboard information to the remote access engine.

12. A remote access computer installed between at least one host computer and a remote computer, the host computer having a particular type of operating system, the remote access computer comprising:

a video capture circuit connected to a standard video output connector of the host computer to receive an analog RGB video signal normally destined for a standard monitor associated with the host computer;

a keyboard/mouse interface connected to at least one of:

a standard keyboard input connector of the host computer to deliver a keyboard control signal normally delivered by a standard keyboard associated with the host computer; and

a standard mouse input connector of the host computer to deliver a mouse control signal normally delivered by a standard mouse associated with the host computer;

a video process circuit, in communication with the video capture circuit, to synchronize and digitize the analog RGB video signal received by the video capture circuit;

a network interface communicating with a network medium which is also communicating with the remote computer;

a video interface communicating with:

the video process circuit to receive the synchronized and digitized RGB video signal, and

the network medium to deliver the digitized RGB video signal to the remote computer to allow the remote computer user to view in essentially real-time the same RGB video signal as provided by the host computer; and wherein:

the video capture circuit, keyboard/mouse interface, video process circuit, network interface, and video interface all operate independently of the particular type of operating system on the host computer.

13. A remote access system communicating with a digital network transmission medium to communicate user input signals from a remote computer to a host computer via the transmission medium and video signals from the host computer to the remote computer via the transmission medium, comprising:

a user input process to capture the user input signals for digital transmission to the host computer;

a video process to capture the video input signals, digitize them and format them for transmission to the remote computer, even when the host computer has locked up to no longer accept any user input signals;

a standard remote access engine:

to communicate the user input signals on the transmission medium between the host and remote computers, and

to communicate the video signals, in digital format, on the transmission medium between the host and remote computers, even when the host computer has locked up to no longer accept any user input signals.

14. A circuit module for a computer having in operation therein a remote access engine to communicate between a host server and a remote workstation, including:

video buffer circuits to receive, respectively, red, green and blue analog video signals from the host server;

sync polarity circuits to receive, respectively, horizontal and vertical sync signals from the host server;

analog to digital converters communicating with the video buffer circuits to receive the red, green and blue analog video signals and convert them to digital video signals;

a phase locked loop video dot clock circuit communicating with the sync polarity circuits and outputting a dot clock signal;

a TTL converter receiving the digital video signals and converting them to a TTL format; and

a video processing circuit, including a cpu and a programmable gate array, connected to the sync polarity circuits, the phase locked loop video dot clock circuit, and the TTL

converter to automatically determine a graphics mode of the red, green and blue analog video signals.

15. A circuit module according to claim 14, wherein the programmable gate array includes circuitry to determine a video frame rate characteristic of the red, green and blue analog video signals.

16. A circuit module according to claim 14, wherein the graphics mode includes a number of available colors.

17. A circuit module according to claim 14, wherein the graphics mode includes a screen resolution in horizontal pixels per screen by vertical pixels per screen.

18. A circuit module according to claim 14, wherein the graphics mode includes a table characterizing a number of available colors versus a screen resolution in horizontal pixels per screen by vertical pixels per screen.

19. A circuit module according to claim 14, wherein the video processing circuit includes memory to store a set of predefined video graphics mode characteristics, and wherein the video processing circuit further divides the red, green and blue analog video signals into one or more video screen segment parts and compares the video screen segment parts to the stored predefined video graphics mode characteristics.

20. A circuit module according to claim 19, wherein the video processing circuit includes a video checksum manager for storing and managing checksums associated with each video screen segment part.

21. A computer having a virtual path communication link with a remote computer over a network medium, comprising:

a remote access engine;

a data bus;

a set of circuit modules in communication with a set of corresponding host computers to receive analog video signals from the corresponding host computers, to digitize the analog video signals, to synchronize the video signals to a video display

characteristic of the remote computer, and to present the digitized and synchronized video signals to the data bus;

a communication port establishing a connection with the network medium, the remote access engine receiving the digitized and synchronized video signals from a selected one of said set of circuit modules and delivering the selected digitized video signals to the remote computer for display.

22. A computer according to claim 21, wherein:

each circuit module includes:

a main CPU to coordinate a digital to analog conversion of host video signals from a corresponding host computer;

a field programmable gate array, in communication with the main CPU;

a video interface circuit, in communication with the field programmable gate array, to capture the host video signals for the main CPU and field programmable gate array;

a video RAM to store host video signals digitized by the main CPU and field programmable gate array, and to deliver the digitized video signals to the remote access engine for delivery to the remote computer, the video RAM in communication with the field programmable gate array to receive at least video sync processing from the field programmable gate array;

at least one of a mouse driver circuit and a keyboard driver circuit, in communication with the main CPU, to receive, respectively, mouse and keyboard information from the remote computer;

a bus controller, in communication with the field programmable gate array, to communicate information identifying the digitized host video signals and the mouse and keyboard information to the remote access engine.

23. A remote access device to remotely control a host computer and to receive at a remote location a video signal from the host computer, comprising:

a remote access engine between the host computer and the remote location to coordinate delivery of data packets along a telecommunications link between the host computer and the remote location; and

a remote access controller, including a remote access control card communicating with the telecommunications link, to read a present caller ID associated with the remote location, to store a list of predefined caller IDs, to compare the present caller ID with the list and to disable the remote access engine whenever the present caller ID fails to match any from the list of predefined caller IDs.

24. A remote access device according to claim 23, wherein the remote access controller further includes a telephone jack to automatically issue a page alert to a predefined telephone number whenever the present caller ID fails to match any from the list of predefined caller IDs.

25. A remote access device according to claim 23, wherein the remote access controller further resets the host computer wherever the predefined caller ID matches the present caller ID.

26. A remote access device according to claim 23, wherein the remote access controller further reboots the host computer wherever the predefined caller ID matches the present caller ID.

27. A remote access device according to claim 23, further including an external modem and a control module providing AC power to the host computer, the external modem communicating with the control module and automatically answering calls received by the external modem on a different telecommunications link, said control module temporarily interrupting power to the host computer whenever said external modem automatically answers a call.

28. A computer circuit coupled to a data bus and communicating with a Host PC, comprising:

a video input buffering circuit receiving RGB video signals from the Host PC;

an analog to digital converter circuit coupled to the video input buffering circuit to receive and digitize the RGB video signals;

a main gate array circuit to receive the digitized RGB video signals from the analog to digital converter circuit;

a video memory circuit to store the digitized RGB video signals;

a second gate array circuit coupled to the main gate array circuit, the second gate array circuit bridging data between the main gate array circuit and the data bus;

a system clock circuit providing clock signals to the main and second gate array circuits;

a main cpu, communicating with the main and second gate array circuits to direct data between the video memory circuit and the second gate array circuit, the main gate array also controlling data traffic between the analog to digital converter circuit, the video memory circuit, and the main cpu;

a keyboard cpu in communication with the main cpu and at least one of an external keyboard and an external mouse; and

a pixel clock generator to provide a pixel clock signal to the analog to digital converter circuit, the pixel clock generator reproducing in frequency and phase a host pixel clock signal used by the Host PC to produce the RGB video signals received by the video input buffering circuit.

29. A computer circuit according to claim 28, wherein the video memory is a combination of interleaved video RAMs.

30. A computer circuit according to claim 28, wherein the video input buffering circuit includes operational amplifiers, one for each R, G, and B component of the RGB video signal.

31. A computer circuit according to claim 28, wherein the main gate array circuit includes a checksum section to determine a checksum difference between two video frames of the RGB video signal.

32. A computer circuit according to claim 28, wherein the main gate array circuit includes a checksum section to determine a checksum difference between two video frames of the RGB video signal and delivers the checksum difference to the second gate array circuit.

33. A computer circuit according to claim 28, wherein the video memory circuit includes a video RAM and a palette RAM, the main gate array circuit including a checksum section to derive a

checksum difference between video frame information in the video RAM versus the palette RAM.

34. A computer circuit according to claim 28, wherein the second gate array circuit includes a timing and control section.

35. A computer circuit according to claim 28, wherein the second gate array circuit includes a video format decoding section.

36. A computer circuit according to claim 28, wherein the second gate array circuit including a video latch area.

37. A computer circuit according to claim 28, wherein the pixel clock generator includes a phase locked loop.

38. A computer circuit according to claim 28, wherein the second gate array circuit includes a video format decoding section generating a vertical blanking period signal and the pixel clock generator includes a sample and hold circuit receiving the vertical blanking period signal at a hold input of said sample and hold circuit, said sample and hold circuit having a hold period greater than a maximum vertical blanking period.

39. A computer circuit according to claim 28, further including:

an ID switch to uniquely identify the circuit communicating with the Host PC in comparison to other circuits communicating with other Host PCs via the data bus.

40. A circuit for communicating RGB video information from a Host computer to a remote computer via a network link, comprising:

video input circuitry to receive the RGB video information from the Host computer;

video processing circuitry to digitize the RGB video information and to decode a video format of the RGB video information received by the video input circuitry; and

a flash palette converter circuit, including:

an address mux receiving the digitized RGB video information as a stream of digital RGB pixel data;

a flash palette converter RAM being addressed by the stream of digital RGB pixel data and outputting for each RGB pixel a palette index byte corresponding to a color value of said RGB pixel.

41. A circuit according to claim 40, further including a pixel assembly circuit to condense a number of palette index bytes into a single assembled pixel byte for storage, including:

a logic array receiving the video format of the RGB video information from the video processing circuitry and receiving the palette index byte from the flash palette converter circuit; and

a set of flip-flops controlled by the logic array to assemble the number of palette index bytes as a function of a characteristic of the video format of the RGB video information.

42. A remote access PC to facilitate communications between a host computer and a remote computer distantly located relative to each other, comprising:

a remote access process to establish a logical data path between the host computer and the remote computer, upon remote user initiation the remote access process receiving a reboot signal from the remote computer on the logical data path;

a control module having an AC power input to receive AC power from an external power source, an AC power output to deliver the AC power from the external power source to the host computer, a switch therebetween, and a control data input to receive the reboot signal and thereupon interrupt AC power to the host computer by operation of the switch.

43. A remote access PC to facilitate communications between a host computer and a remote computer distantly located relative to each other, comprising:

a remote access process to establish a logical data path between the host computer and the remote computer;

a control module having an AC power input to receive AC power from an external power source, an AC power output to deliver the AC power from the external power source to the host computer, a switch therebetween, and a control data input to receive a reboot signal and thereupon interrupt AC power to the host computer by operation of the switch;

a communication circuit establishing a different logical data path between the remote computer and the communication circuit, the communication circuit delivering the reboot signal to the control module when commanded to do so by the remote computer via the different logical data path.

44. A remote access PC according to claim 43, wherein the communication circuit is a modem.

45. A system for coordinating communications between a remote computer and a controlled device, comprising:

a first control module to receive AC power from an external power source, to deliver the AC power from the external power source to the controlled device, the first control module including a switch therebetween to interrupt AC power to the controlled device by operation of the switch;

a communication circuit establishing a logical data path between the remote computer and the first control module, the communication circuit delivering an instruction from the remote computer to the first control module via the logical data path to interrupt AC power to the controlled device by operation of the switch.

46. A system according to claim 45, further comprising:

a management PC communicating with the first control module to deliver an interrupt signal to the first control module whenever the remote computer delivers an interrupt instruction to the management PC via a different logical data path;

47. A system according to claim 45, further comprising:

a second control module daisy-chained to the first control module to receive AC power from the external power source, to deliver the AC power from the external power source to a second controlled device, the second control module including a second switch therebetween to interrupt AC power to the second controlled device by operation of the second switch;

the communication circuit establishing a logical data path between the remote computer and the second control module, and delivering an instruction from the remote computer to the second

control module via the logical data path to interrupt AC power to the second controlled device by operation of the second switch.

48. A remote access device for communicating real time video signals from a host PC to a remote PC and for communicating mouse signals entered in response to the real time video signals from the remote PC to the host PC, comprising:

a video process to capture and digitize the video signals from the host PC including video signals indicating a position of a mouse pointer on a monitor associated with the host PC, the position of said mouse pointer identified by the video process being delayed by a period associated with the capturing and digitizing steps;

a mouse synchronizer to capture a current mouse position of the mouse pointer on the monitor associated with the remote PC;

a video application to communicate the current mouse position of the mouse pointer on the monitor associated with the remote PC to the host PC whereupon the host PC jumps the host mouse pointer to a position coincident with the current mouse position.

49. A remote access device according to claim 48, wherein the current mouse position is communicated from the remote computer to the mouse synchronizer in the form of current X/Y coordinates of the remote computer mouse pointer.

50. A remote access device according to claim 48, wherein the mouse synchronizer captures the current mouse position of the mouse pointer on the monitor associated with the remote PC whenever a remote user clicks a mouse button.

51. A remote access interface between a remote workstation having an associated remote monitor and a host device having an associated host monitor, comprising:

a host mouse;

a video capture circuit to intercept analog video signals from the host device and applying the analog video signals to the host monitor such that the host monitor displays a host pointer associated with the host mouse;

a mouse capture circuit to capture remote mouse signals from the remote workstation over a telecommunication path and to

transmit the remote mouse signals to the host device for further processing as though the remote mouse signals were received from the host mouse;

a mouse adjustment process to cause the host pointer on the host monitor to jump to a position determined by the remote mouse signals.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

ANDERSON et al.

Atty. Ref.: 2540-76

Serial No. 09/401,501

Group: 2152

Filed: September 22, 1999

Examiner: Vu, T.

For: SYSTEM AND METHOD FOR ACCESSING AND OPERATING PERSONAL COMPUTERS REMOTELY

* * * * * * * * * * * *

October 10, 2002

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

AMENDMENT

Responsive to the Official Action dated April 10, 2002 (for which a three month extension of time fee is enclosed), please amend the above-identified application as follows:

IN THE CLAIMS

Kindly cancel claims 42 and 45-47, without prejudice.

Kindly amend claims 1, 12 and 21 as follows:

Please substitute the following amended claim(s) for corresponding claim(s) previously presented. A copy of the amended claim(s) showing current revisions is attached.

1. (Amended) A circuit module for a remote access computer, having in operation therein a remote access engine, to communicate between a data bus and the remote access engine, comprising:

a video capture circuit to capture analog video signals created by an external host computer different from the remote access computer, to digitize and packet the captured video signals; and to sync the captured video signals to a video output on an external remote site computer different from the external host computer;

a mouse circuit to capture user input mouse signals created by the external remote site computer and captured by the remote access engine from the external remote site computer when initiated by the external remote site computer via a network connection; and

at least one of said video capture circuit or mouse circuit including a mouse lag correction routine to coordinate the mouse signals captured by the mouse circuit and the video capture circuit.

12. (Amended) A remote access computer installed between at least one host computer and a remote computer, the host computer having a particular type of operating system, the remote access computer comprising:

a video capture circuit connected to a standard video output connector of the host computer to receive an analog RGB video signal normally destined for a standard monitor associated with the host computer;

a keyboard/mouse interface connected to at least one of:

a standard keyboard input connector of the host computer to deliver a keyboard control signal normally delivered by a standard keyboard associated with the host computer; and

a standard mouse input connector of the host computer to deliver a mouse control signal normally delivered by a standard mouse associated with the host computer;

a video process circuit, in communication with the video capture circuit, to synchronize and digitize the analog RGB video signal received by the video capture circuit;

a network interface communicating with a network medium which is also communicating with the remote computer;

a video interface communicating with:

the video process circuit to receive the synchronized and digitized RGB video signal, and

the network medium to deliver the digitized RGB video signal to the remote computer to allow the remote computer user to view in essentially real-time the same RGB video signal as provided by the host computer including the mouse control signal adjusted for lag; and wherein:

the video capture circuit, keyboard/mouse interface, video process circuit, network interface, and video interface all operate independently of the particular type of operating system on the host computer.

21. (Amended) A computer having a virtual path communication link with a remote computer over a network medium, comprising:

a remote access engine;

a data bus;

a set of circuit modules in communication with a set of corresponding host computers to receive analog video signals from the corresponding host computers, to digitize the analog video signals, to synchronize the video signals to a video display characteristic of the remote computer, and to present the digitized and synchronized video signals to the data bus;

a communication port establishing a network connection via the network medium between the remote access engine and a selected one of said set of circuit modules to receive the digitized and synchronized video signals and to deliver the selected digitized video signals to the remote computer for display.

REMARKS

Reconsideration and allowance of the subject application is respectfully requested in light of the above amendments and the following remarks. After entry of this Amendment, claims 1 through 41, 43-44, and 48-51 will remain pending.

Claims 1-51 stand rejected under 35 U.S.C. § 102(b) over "Perholtz (5,327,559)." As applicant's representative communicated by telephone to the Examiner several months ago, the official action includes some type of error because U.S. Patent 5,327,559 is not directed to Perholtz. Further, the two different Perholtz patents (5,732,212 and

5,566,339) that are cited in the present record don't line up with the rejected noted. Thus, it's not clear from the Office Action which reference is being relied upon for the rejection. Applicant simply notes in this response that neither Perholtz reference anticipates the present claims as they now stand and provides specific distinction to that effect.

As to independent claim 1 (and dependent claims 2-10), neither Perholtz reference discloses the claimed mouse lag correction routine to coordinate the mouse signals captured by the mouse circuit and the video signals captured by the video capture circuit.

As to independent claim 11, neither Perholtz reference discloses the particular structures recited in the communication arrangements specifically recited by claim 11. Thus, while one can find a CPU, a video interface circuit, and a video RAM in Perholtz, there is no disclosure of "a field programmable gate array, in communication with the main CPU," "and video interface circuit in communication with the field programmable gate array," "the video RAM in communication with the field programmable gate array to receive at least sync processing from the field programmable gate array," nor "a bus controller in communication with the field programmable gate array...". While bits and pieces of some of the elements of claim 11 may be found in Perholtz, the specific combination of structure recited in claim 11 is not disclosed.

As to claim 12, Perholtz does not disclose many of the features of claim 12 in the combination presented. Now in addition, claim 12 has been amended to recite the mouse control signal being adjusted for lag, something which is not disclosed or suggested by Perholtz.

As to independent claim 13, neither Perholtz reference discloses "the standard remote access engine." In fact, Perholtz '212 criticizes and thus teaches away from such a standard engine.

As to claim 14, neither Perholtz discloses the "phase locked loop video dot clock circuit" nor anything suggesting that type of circuit. Dependent claims 15-20 also incorporate the same phase lock loop video dot clock circuit limitation of claim 14.

As to independent claim 21, neither Perholtz reference discloses the communication port establishing a network connection via the network medium between the remote access engine and a selected one of said set of circuit modules to receive the digitized and synchronized video signals and to deliver the selected digitized video signals to the remote computer for display. While Perholtz 212 discloses a daisy chain embodiment, the daisy chain embodiment cannot create the type of communication port establishments specifically recited by claim 21.

As to independent claim 23 (and dependent claims 24-27), neither Perholtz reference discloses comparing "the present caller ID with the list and to disable the remote access engine whenever the present caller ID fails to match any from the list of predefined caller IDs." This feature is nowhere disclosed or described in any of the Perholtz references, including at col. 18, lines 9-28 where host unit DIP switch selection mechanisms are described. Such mechanisms are not Present Caller IDs recited by claim 23.

As to independent claim 28 (and dependent claims 29-39), neither Perholtz reference discloses a combination of "main gate array circuits" and "second gate array

circuits" with "a pixel clock generator reproducing infrequency and phase a host pixel clock signal...".

As to independent claim 40, neither Perholtz reference discloses "a flash palette converter circuit" of any kind. Although the '212 patent discloses pixel generation, it does not disclose flash palette converter circuits of the kind recited in claim 40.

As to independent claim 42, applicant has cancelled this claim.

As to independent claim 43, neither Perholtz reference discloses establishing "a different logical data path between the remote computer and the communication circuit" by which the reboot signal is redirected.

As to independent claim 45 and dependent claims 46-47, applicant has cancelled those claims.

As to independent claim 48, neither Perholtz reference discloses "a mouse synchronizer" to capture a current mouse position of the mouse pointer on the monitor associated with the remote PC, nor of the "jumping" of the host mouse pointer to a position coincident with the current mouse position. As previously described with respect to claim 1, mouse lag correction of the type described in the present claims is not taught or suggested by either Perholtz reference.

Finally, as to independent claim 51, neither Perholtz reference discloses "a mouse adjustment process to cause the host pointer on the host monitor to jump to a position determined by the remote mouse signals," as discussed previously with respect to claim 48.

The applicant appreciates that the Examiner has given careful consideration to the present case but believes that the present claims as presented provide substantial and patentable distinctions over the Perholtz references. Applicant trusts that the above comments will assist the Examiner in identifying those areas of the present claims which, in combination with the other elements recited therein, provide patentable distinctions over the art of record. Accordingly, the applicant requests allowance of the present claims.

Attached hereto is a marked-up version of the changes made to the specification and claim(s) by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

1. (Amended) A circuit module for a remote access computer, having in operation therein a remote access engine, to communicate between a data bus and the remote access engine, comprising:

a video capture circuit to capture analog video signals created by an external host computer different from the remote access computer, to digitize and packet the captured video signals; and to sync the captured video signals to a video output on an external remote site computer different from the external host computer;

a [keyboard/]mouse circuit to capture user input [signals identifying at least one from the group consisting of keyboard and] mouse signals created by the external remote site computer and captured by the remote access engine from the external remote site computer when initiated by the external remote site computer via a network connection; and

at least one of said video capture circuit or mouse circuit including a mouse lag correction routine to coordinate the mouse signals captured by the mouse circuit and the video capture circuit.

12. (Amended) A remote access computer installed between at least one host computer and a remote computer, the host computer having a particular type of operating system, the remote access computer comprising:

a video capture circuit connected to a standard video output connector of the host computer to receive an analog RGB video signal normally destined for a standard monitor associated with the host computer;

a keyboard/mouse interface connected to at least one of:

a standard keyboard input connector of the host computer to deliver a keyboard control signal normally delivered by a standard keyboard associated with the host computer; and

a standard mouse input connector of the host computer to deliver a mouse control signal normally delivered by a standard mouse associated with the host computer;

a video process circuit, in communication with the video capture circuit, to synchronize and digitize the analog RGB video signal received by the video capture circuit;

a network interface communicating with a network medium which is also communicating with the remote computer;

a video interface communicating with:

the video process circuit to receive the synchronized and digitized RGB video signal, and

the network medium to deliver the digitized RGB video signal to the remote computer to allow the remote computer user to view in essentially real-time the same RGB video signal as provided by the host computer <u>including the mouse control signal adjusted for lag</u>; and wherein:

the video capture circuit, keyboard/mouse interface, video process circuit, network interface, and video interface all operate independently of the particular type of operating system on the host computer.

21. (Amended) A computer having a virtual path communication link with a remote computer over a network medium, comprising:

a remote access engine;

a data bus;

a set of circuit modules in communication with a set of corresponding host computers to receive analog video signals from the corresponding host computers, to digitize the analog video signals, to synchronize the video signals to a video display characteristic of the remote computer, and to present the digitized and synchronized video signals to the data bus;

a communication port establishing a network connection via [with] the network medium between the remote access engine and a selected one of said set of circuit modules to receive [receiving] the digitized and synchronized video signals and to [from a selected one of said set of circuit modules and delivering] deliver the selected digitized video signals to the remote computer for display.